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Docket No. 239799US2

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF: Tetsuroh MIURA, et al.

SERIAL NO: 10/612,146

GAU: 2681

FILED: July 3, 2003

EXAMINER:

FOR: ELECTROPHOTOGRAPHIC IMAGE FORMING APPARATUS

INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR 1.97

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

SIR:

Applicant(s) wish to disclose the following information.

REFERENCES

- ☐ The applicant(s) wish to make of record the references listed on the attached form PTO-1449. Copies of the listed references are attached, where required, as are either statements of relevancy or any readily available English translations of pertinent portions of any non-English language references.
- ☐ A check or credit card payment form is attached in the amount required under 37 CFR §1.17(p).

RELATED CASES

- ☒ Attached are two lists of applicant's pending application(s) which may be related to the present application. A copy of the claims and drawings of the pending application(s) is attached.
- ☐ A check or credit card payment form is attached in the amount required under 37 CFR §1.17(p).

CERTIFICATION

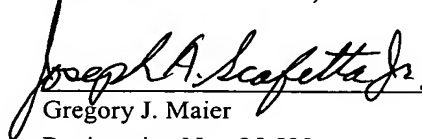
- ☐ Each item of information contained in this information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this statement.
- ☒ No item of information contained in this information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application or, to the knowledge of the undersigned, having made reasonable inquiry, was known to any individual designated in 37 CFR §1.56(c) more than three months prior to the filing of this statement.

DEPOSIT ACCOUNT

- ☒ Please charge any additional fees for the papers being filed herewith and for which no check or credit card payment is enclosed herewith, or credit any overpayment to deposit account number 15-0030. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



Gregory J. Maier

Registration No. 25,599

Joseph A. Scafetta, Jr.
Registration No. 26, 803

Customer Number

22850

Tel. (703) 413-3000
Fax. (703) 413-2220
(OSMMN 05/03)

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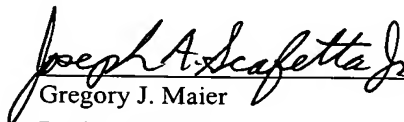
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LIST OF RELATED CASES

<u>Docket Number</u>	<u>Serial or Patent Number</u>	<u>Filing or Issue Date</u>	<u>Inventor/ Applicant</u>
239799US2*	10/612,146	07/03/03	MIURA et al.
248752US3	10/786,120	02/26/04	HOSOKAWA et al.

*Present Application; listed for information
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239799US2*	10/612,146	07/03/03	MIURA et al.
248754US3	10/788,488	03/01/04	ARAI et al.

*Present Application; listed for information

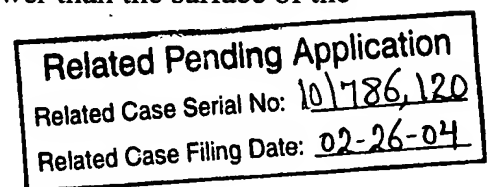
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WHAT IS CLAIMED:

1. A process cartridge detachably attached to an image forming apparatus, comprising:
 - an image carrier configured to carry an image;
 - at least one image forming process device configured to perform image forming processes;
 - a case configured to integrally accommodate the image carrier and the at least one image forming process device; and
 - a first non-slip holding portion provided on a surface of the case,wherein the process cartridge is configured to move in a direction substantially parallel to a longitudinal direction of the image carrier, and insertion or removal of the process cartridge from the image forming apparatus is facilitated by grasping the process cartridge by the first non-slip holding portion and a rear surface of the case opposite from the first non-slip holding portion.
2. The process cartridge according to claim 1, further comprising:
 - a second non-slip holding portion provided on the rear surface of the case, wherein insertion or removal of the process cartridge from the image forming apparatus is facilitated by grasping the process cartridge by the first and the second non-slip holding portions.
3. The process cartridge according to claim 1, wherein the case further comprises an opening exposing at least a portion of the image carrier, and the surface of the case containing the first non-slip holding portion is oriented along a direction substantially equal to a direction of a surface of the image carrier exposed through the opening.
4. The process cartridge according to claim 3, wherein the surface on which the first non-slip holding portion is provided is in a stepped relationship relative to the surface of the image carrier exposed through the opening.
5. The process cartridge according to claim 4, wherein the surface on which the first non-slip holding portion is provided is located at a position lower than the surface of the image carrier exposed through the opening.

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6. The process cartridge according to claim 1, wherein the surface of the case containing the first non-slip holding portion is disposed on a front side of the case substantially oriented in a direction of movement of the process cartridge from an inserted position to a pulled-out position.

7. The process cartridge according to claim 6, wherein the first non-slip holding portion is disposed at a position opposite from a position of the image carrier relative to a center position of the case in a substantially horizontal direction of the case orthogonal to the direction of movement of the process cartridge.

8. The process cartridge according to claim 6, further comprising:
a grip configured to be gripped when the process cartridge is moved between the inserted position and the pulled-out position, the grip being provided on a frontal wall surface of the case in the direction of movement of the process cartridge.

9. The process cartridge according to claim 8, wherein the image carrier is configured to rotate, and the first non-slip holding portion and the grip are provided on sides opposite to each other relative to a vertical plane containing a rotational axis of the image carrier.

10. The process cartridge according to claim 9, wherein a distance between the first non-slip holding portion and the rotational axis of the image carrier is greater than a distance between the grip and the rotational axis of the image carrier.

11. The process cartridge according to claim 1, wherein the first non-slip holding portion is distinguished from a surface of the case other than the surface of the case on which the first non-slip holding portion is provided.

12. The process cartridge according to claim 11, wherein a frictional coefficient of the first non-slip holding portion is greater than a frictional coefficient of the surface of the case.

13. The process cartridge according to claim 12, wherein the first non-slip holding portion is formed by carving the surface of the case.

14. The process cartridge according to claim 12, wherein the first non-slip holding portion is formed by attaching a member to the surface of the case.

15. The process cartridge according to claim 1, wherein the at least one image forming process device comprises at least one of a developing device configured to develop the image carried by the image carrier, a charging device configured to charge a surface of the image carrier, and a cleaning device configured to clean the surface of the image carrier.

16. An image forming apparatus, comprising:
an image carrier configured to carry an image;
image forming process devices configured to perform image forming processes;
a process cartridge detachably attached to the image forming apparatus, the process cartridge comprising:
a case configured to integrally accommodate the image carrier and at least one of the image forming process devices; and
a first non-slip holding portion provided on a surface of the case,
wherein the process cartridge is configured to move in a direction substantially parallel to a longitudinal direction of the image carrier, and insertion or removal of the process cartridge from the image forming apparatus is facilitated by grasping the process cartridge by the first non-slip holding portion and a rear surface of the case opposite from the first non-slip holding portion.

17. The image forming apparatus according to claim 16, further comprising:
a second non-slip holding portion provided on the rear surface of the case, wherein insertion or removal of the process cartridge from the image forming apparatus is facilitated by grasping the process cartridge by the first and the second non-slip holding portions.

18. The image forming apparatus according to claim 16, wherein the case further comprises an opening exposing at least a portion of the image carrier, and the surface of the case containing the first non-slip holding portion is oriented along a direction substantially equal to a direction of a surface of the image carrier exposed through the opening.

19. The image forming apparatus according to claim 18, wherein the surface on which the first non-slip holding portion is provided is in a stepped relationship relative to the surface of the image carrier exposed through the opening.

20. The image forming apparatus according to claim 19, wherein the surface on which the first non-slip holding portion is provided is located at a position lower than the surface of the image carrier exposed through the opening.

21. The image forming apparatus according to claim 16, wherein the surface of the case containing the first non-slip holding portion is disposed on a front side of the case substantially oriented in a direction of movement of the process cartridge from an inserted position to a pulled-out position.

22. The image forming apparatus according to claim 21, wherein the first non-slip holding portion is disposed at a position opposite from a position of the image carrier relative to a center position of the case in a substantially horizontal direction of the case orthogonal to the direction of movement of the process cartridge.

23. The image forming apparatus according to claim 21, further comprising:
a grip configured to be gripped when the process cartridge is moved between the inserted position and the pulled-out position, the grip being provided on a frontal wall surface of the case in the direction of movement of the process cartridge.

24. The image forming apparatus according to claim 23, wherein the image carrier is configured to rotate, and the first non-slip holding portion and the grip are provided on the sides opposite to each other relative to a vertical plane containing a rotational axis of the image carrier.

25. The image forming apparatus according to claim 24, wherein a distance between the first non-slip holding portion and the rotational axis of the image carrier is greater than a distance between the grip and the rotational axis of the image carrier.

26. The image forming apparatus according to claim 16, wherein the first non-slip holding portion is distinguished from a surface of the case other than the surface of the case on which the first non-slip holding portion is provided.

27. The image forming apparatus according to claim 26, wherein a frictional coefficient of the first non-slip holding portion is greater than a frictional coefficient of the surface of the case.

28. The image forming apparatus according to claim 27, wherein the first non-slip holding portion is formed by carving the surface of the case.

29. The image forming apparatus according to claim 27, wherein the first non-slip holding portion is formed by attaching a member to the surface of the case.

30. The image forming apparatus according to claim 16, wherein the image forming process devices comprise at least one of a developing device configured to develop the image carried by the image carrier, a charging device configured to charge a surface of the image carrier, and a cleaning device configured to clean the surface of the image carrier.

31. The image forming apparatus according to claim 16, wherein the image forming apparatus forms single-color images.

32. The image forming apparatus according to claim 16, further comprising a plurality of process cartridges to form multi-color images.

33. A process cartridge detachably attached to an image forming apparatus, comprising:

image carrying means for carrying an image;

image forming process means for performing image forming processes;

accommodating means for accommodating at least one of the image carrying means and the image forming process means; and

a first non-slip holding means for facilitating handling the process cartridge, the first non-slip holding means being provided on a surface of the accommodating means,

wherein the process cartridge is configured to move in a direction substantially parallel to a longitudinal direction of the image carrying means, and insertion or removal of the process cartridge from the image forming apparatus is facilitated by grasping the process cartridge by the first non-slip holding means and a rear surface of the accommodating means opposite from the first non-slip holding means.

34. The process cartridge according to claim 33, wherein the image forming process means comprises at least one of developing means for developing the image carried by the image carrying means, charging means for charging a surface of the image carrying means, and cleaning means for cleaning the surface of the image carrying means.

35. An image forming apparatus, comprising:
image carrying means for carrying an image;
image forming process means for performing image forming processes;
a process cartridge detachably attached to the image forming apparatus, the process cartridge comprising:
 accommodating means for accommodating at least one of the image carrying means and the image forming process means; and
 a first non-slip holding means for facilitating handling the process cartridge, the first non-slip holding means being provided on a surface of the accommodating means,
 wherein the process cartridge is configured to move in a direction substantially parallel to a longitudinal direction of the image carrying means, and insertion or removal of the process cartridge from the image forming apparatus is facilitated by grasping the process cartridge by the first non-slip holding means and a rear surface of the accommodating means opposite from the first non-slip holding means.

36. The image forming apparatus according to claim 35, wherein the image forming process means comprises at least one of developing means for developing the image carried by the image carrying means, charging means for charging a surface of the image carrying means, and cleaning means for cleaning the surface of the image carrying means.

ABSTRACT OF THE DISCLOSURE

A process cartridge detachably attached to an image forming apparatus includes an image carrier, at least one image forming process device, a case that integrally accommodates the image carrier and the at least one image forming process device, and a first non-slip holding portion provided on a partial surface of the case. The process cartridge is configured to move in a direction substantially parallel to a longitudinal direction of the image carrier. When the process cartridge is attached to and detached from the image forming apparatus, an operator of the image forming apparatus holds the process cartridge by grasping the first non-slip holding portion and a rear surface of a part of the case located on a side opposite from the first non-slip holding portion.

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FIG. 1

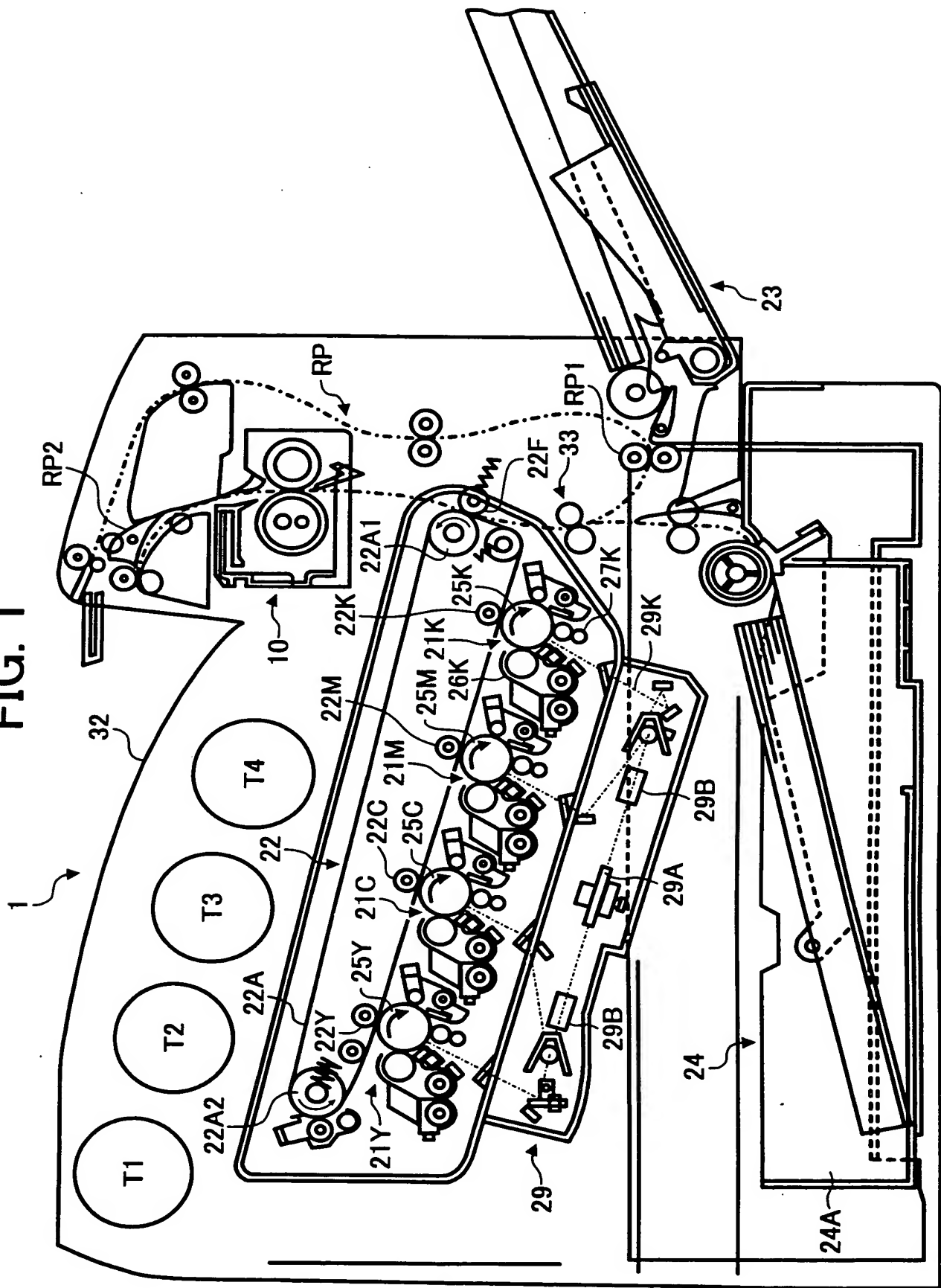


FIG. 2

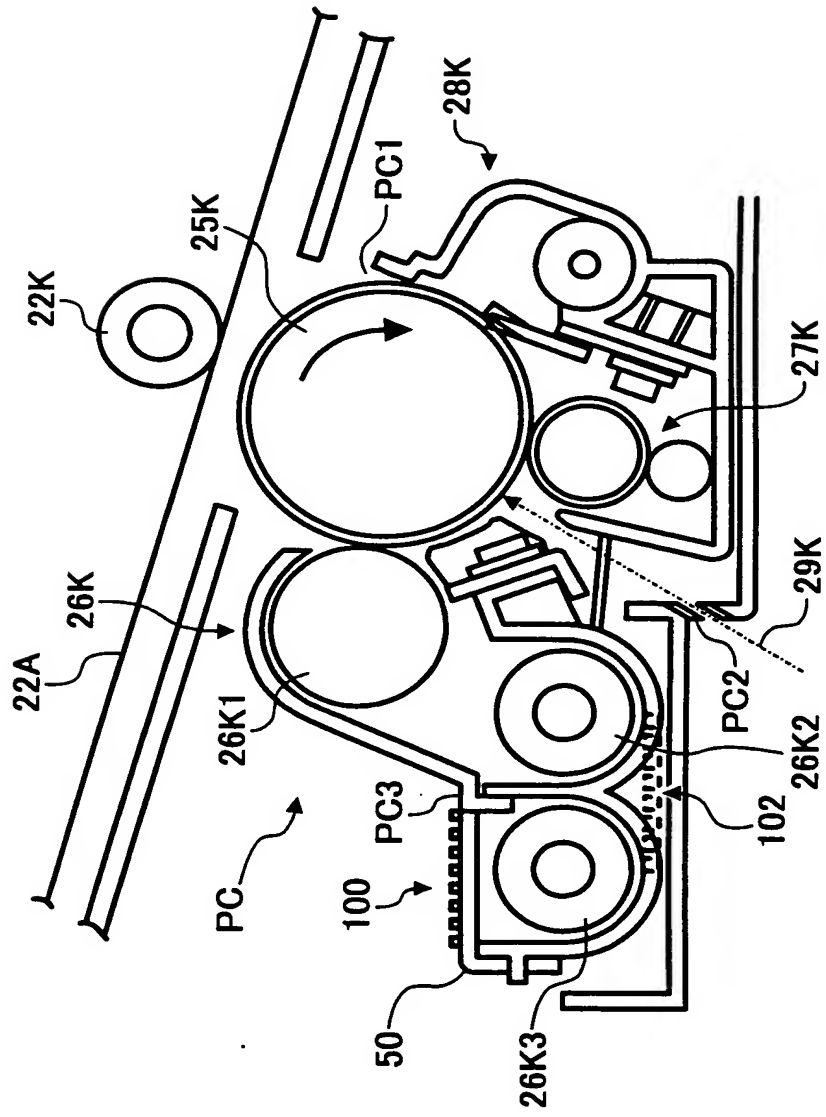


FIG. 3

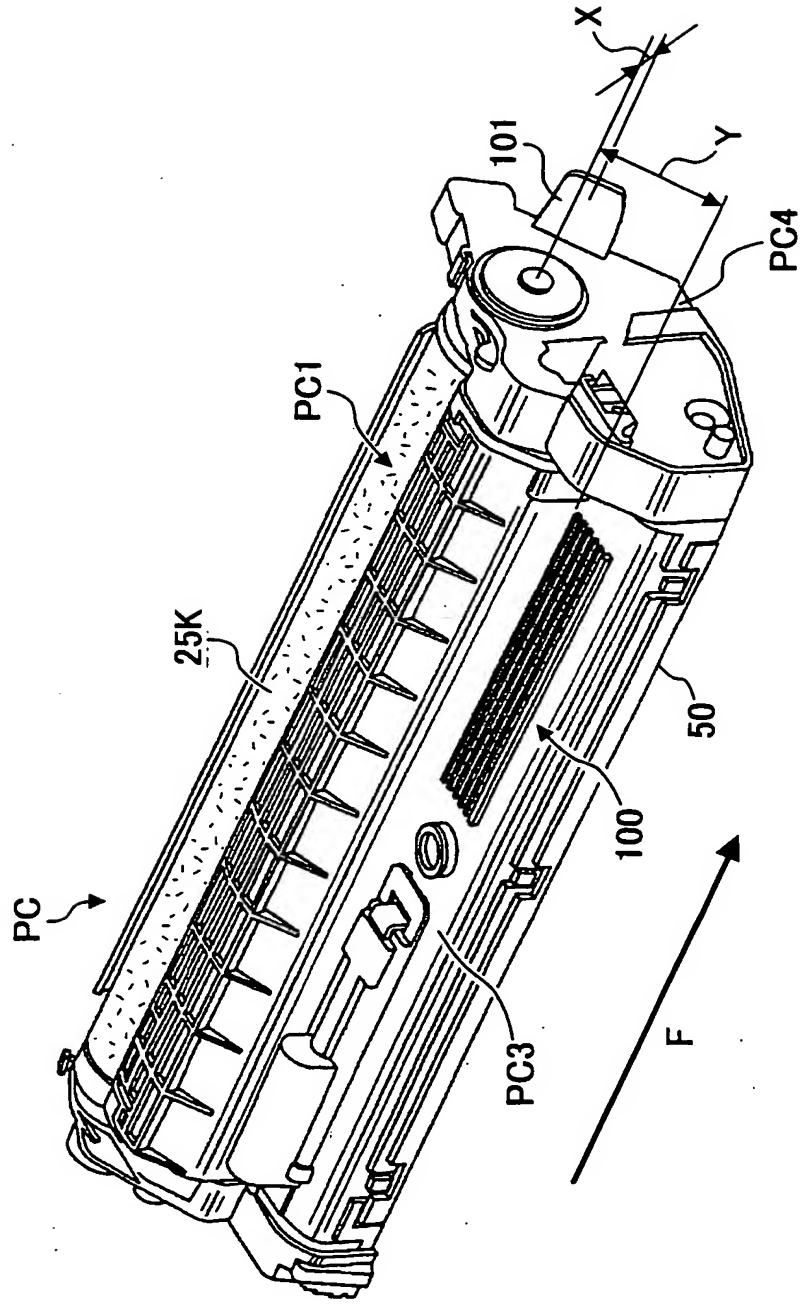


FIG. 4

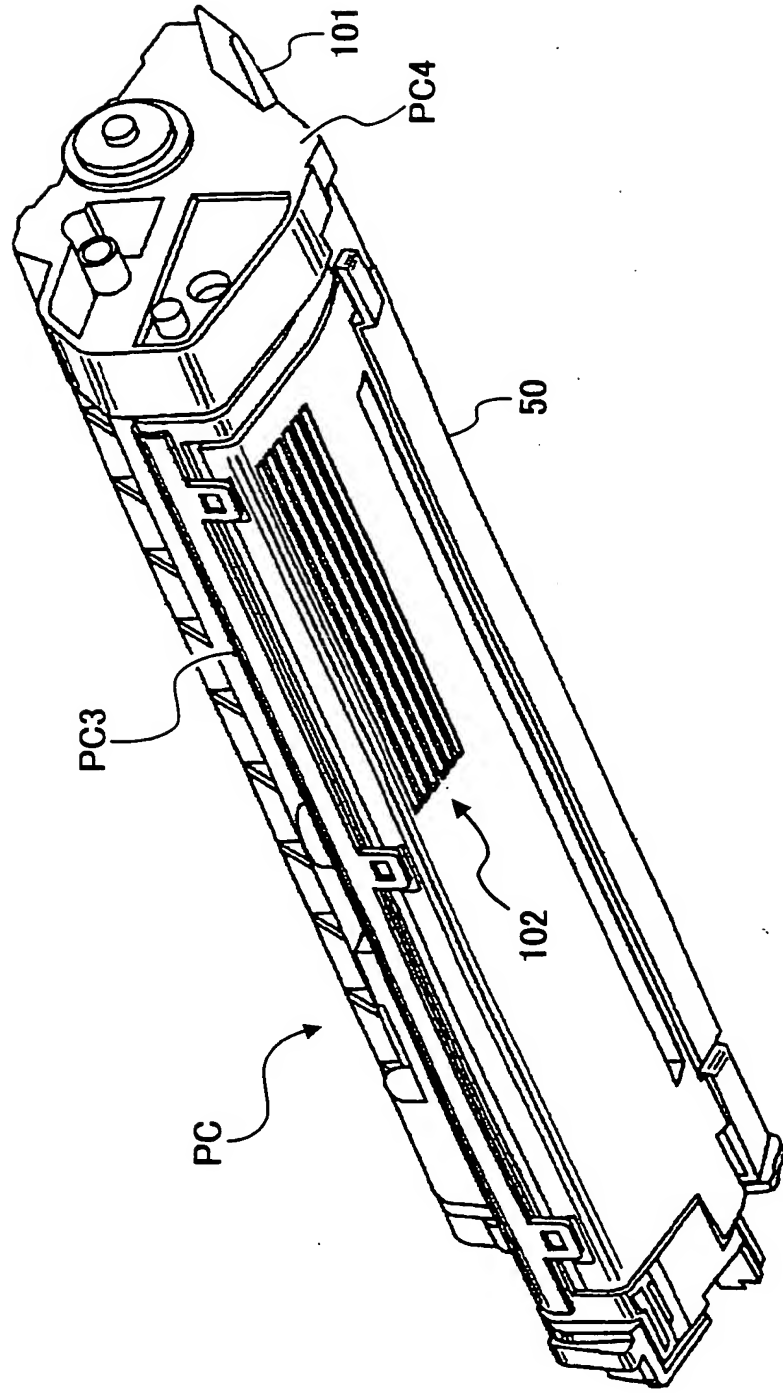


FIG. 5

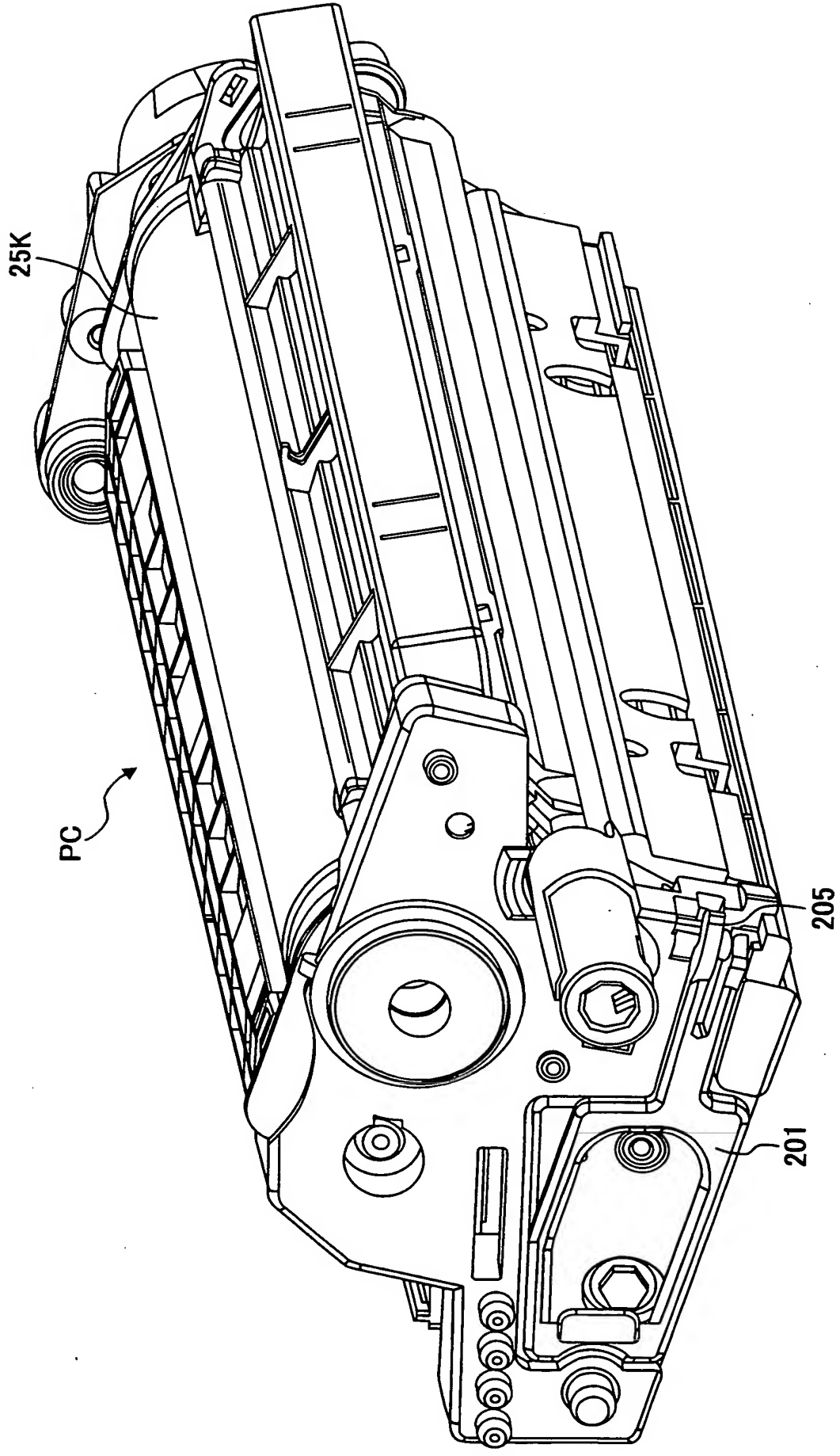
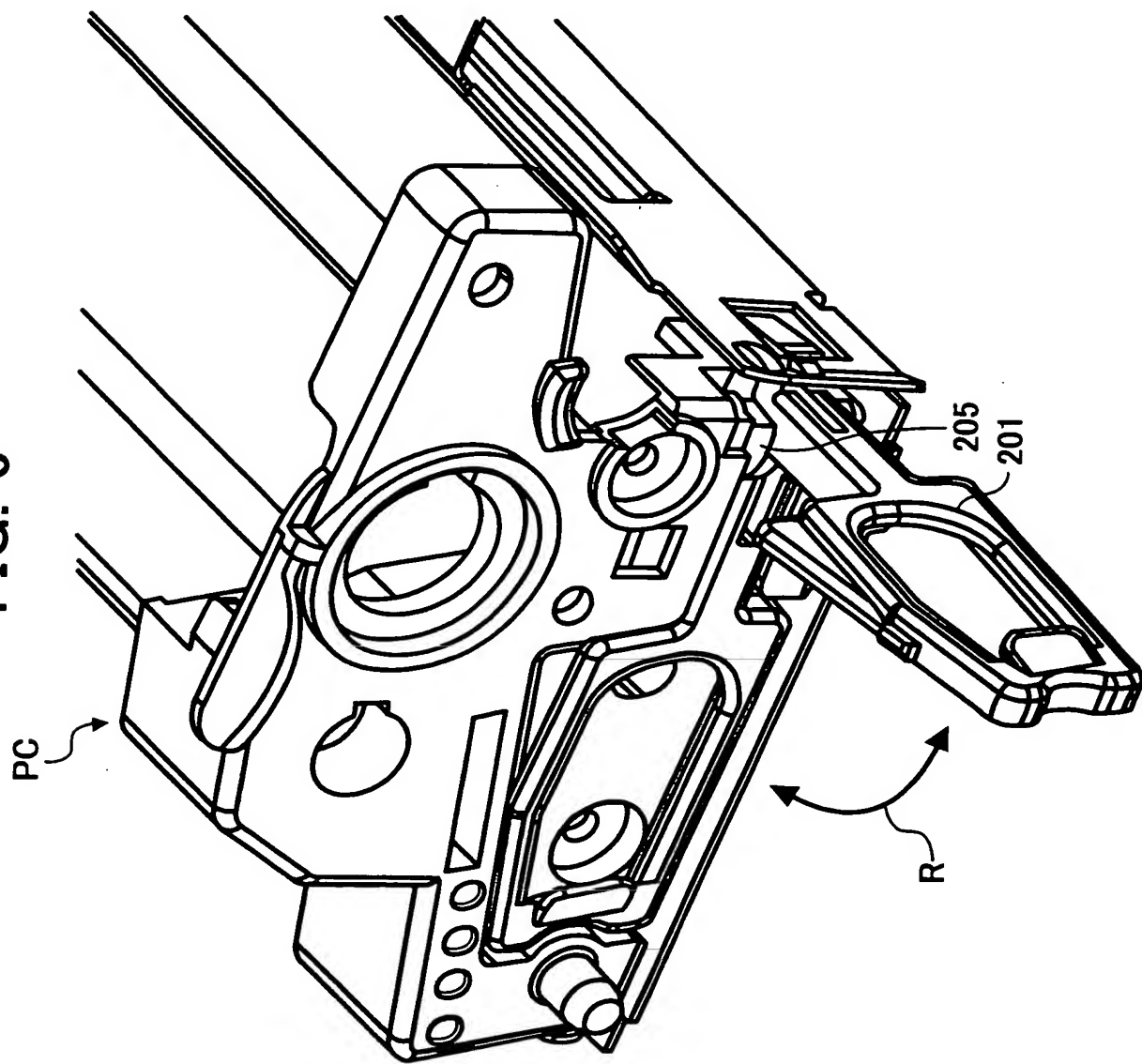


FIG. 6



WHAT IS CLAIMED IS:

1. A process cartridge detachably mounted to an image forming apparatus, said cartridge comprising:
a photoconductive element; and
a housing configured to house said photoconductive element, said housing comprising a guide portion configured to guide the process cartridge.
2. The process cartridge according to Claim 1, wherein said guide portion faces one of an inner wall of the image forming apparatus and another process cartridge adjoining said process cartridge.
3. The process cartridge according to Claim 1, wherein guide portion is configured to guide said another process cartridge adjoining said process cartridge.
4. The process cartridge according to Claim 1, wherein said guide portion is configured to slidably engage with a portion of another process cartridge adjoining said process cartridge.
5. The process cartridge according to Claim 1, wherein said guide portion varies in shape in accordance with a location of said guide portion in the image forming apparatus.
6. The process cartridge according to Claim 1, wherein a configuration of said guide portion is one of being separately formed from said housing and being integrated with said housing.
7. An image forming apparatus, comprising: an image transfer mechanism; and a process cartridge detachably mounted, the process cartridge comprising:
a photoconductive element; and
a housing configured to house said photoconductive element, said housing comprising a guide portion configured to guide the process cartridge.
8. An image forming apparatus, comprising: an image transfer mechanism; and

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Related Pending Application	
Related Case Serial No:	10/788,488
Related Case Filing Date:	03-01-04

a plurality of process cartridges detachably mounted to said image forming apparatus , each one of the plurality of process cartridges being arranged parallel to the others and forming an image for a single color, each of the process cartridges comprising:

a photoconductive element; and

a housing configured to house said photoconductive element, said housing comprising a guide portion configured to guide the process cartridge.

9. A process cartridge detachably mounted to an image forming apparatus, said cartridge comprising:

image carrying means for carrying an image; and

housing means for housing said image carrying means, said housing means further comprising guiding means for guiding the process cartridge.

10. The process cartridge according to Claim 9, wherein said guiding means faces one of an inner wall of the image forming apparatus and another process cartridge adjoining said process cartridge.

11. The process cartridge according to Claim 9, wherein said guiding means guides another process cartridge adjoining said process cartridge.

12. The process cartridge according to Claim 9, wherein said guiding means slidably engages with a portion of process cartridge adjoining said process cartridge.

13. The process cartridge according to Claim 9, wherein said guiding means varies in shape in accordance with a location of said guiding means in the image forming apparatus.

14. The process cartridge according to Claim 9, wherein a configuration of said guiding means is one of being separately formed from said housing means and being integrated with said housing means.

15. An image forming apparatus, comprising:

an image forming means; and

a process cartridge detachably mounted therein, the process cartridge comprising:

image carrying means for developing an image; and

housing means for housing said image carrying means, said housing means further comprising guiding means for guiding the process cartridge.

16. An image forming apparatus, comprising:
an image forming means; and
a plurality of process cartridges, each process cartridge of said plurality being detachably mounted to said image forming apparatus, being arranged in parallel to the other cartridges, and being configured to form an image for a single color, each of the process cartridges comprising:
image carrying means for developing an image; and
housing means for housing said image carrying means, said housing means further comprising guiding means for guiding the process cartridge.

17. A method of providing a process cartridge detachably mounted in an image forming apparatus, the method comprising:
providing a photoconductive element; and
storing said photoconductive element in a housing comprising a guide portion configured to guide the process cartridge.

18. The method according to Claim 17, wherein said storing further comprises arranging said guide portion to face one of an inner wall of the image forming apparatus and another process cartridge adjoining said process cartridge.

19. The method according to Claim 17, wherein said guide portion is configured to guide another process cartridge adjoining said process cartridge.

20. The method according to Claim 17, wherein said guide portion is configured to slidably engage with a portion of another process cartridge adjoining said process cartridge.

21. The method according to Claim 17, wherein said guide portion varies in shape in accordance with a location of said guide portion in the image forming apparatus.

22. The method according to Claim 17, wherein a configuration of said guide portion is one of being separately formed from said housing and being integrated with said housing.

23. A method of making an image forming apparatus, the method comprising:
providing an image transfer mechanism; and
providing a process cartridge detachably mounted in said image forming apparatus,
the process cartridge comprising:

- a photoconductive element; and
- a housing configured to store said photoconductive element said housing
further comprising a guide portion configured to guide the process cartridge.

24. A method of making an image forming apparatus, the method comprising:
providing an image transfer mechanism; and
providing a plurality of process cartridges, each process cartridge of said plurality
being detachably mounted to said image forming apparatus, being arranged in parallel to the
other cartridges, and being configured to form an image for a single color, each one of the
process cartridges comprising:

- a photoconductive element; and
- a housing configured to store said photoconductive element, said housing
further comprising a guide portion configured to guide the process cartridge.

•

ABSTRACT

A method and apparatus of image forming include a process cartridge detachably mounted therein. The process cartridge includes a photoconductive element and a housing storing the photoconductive element and including a guide portion guiding the process cartridge. The guide portion faces an inner wall of the image forming apparatus or another process cartridge adjoining thereto and guides the adjoining process cartridge. The guide portion slidably engages with a portion of the process adjoining cartridge. The guide portion varies in shape according to its position in the image forming apparatus. The guide portion may be separately formed from or integrated with the housing. A method and apparatus of an image forming includes an image transfer mechanism and a plurality of process cartridges arranged in parallel. Each of the process cartridges includes photoconductive elements and a housing, and forms an image for a single separated color.

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FIG. 1

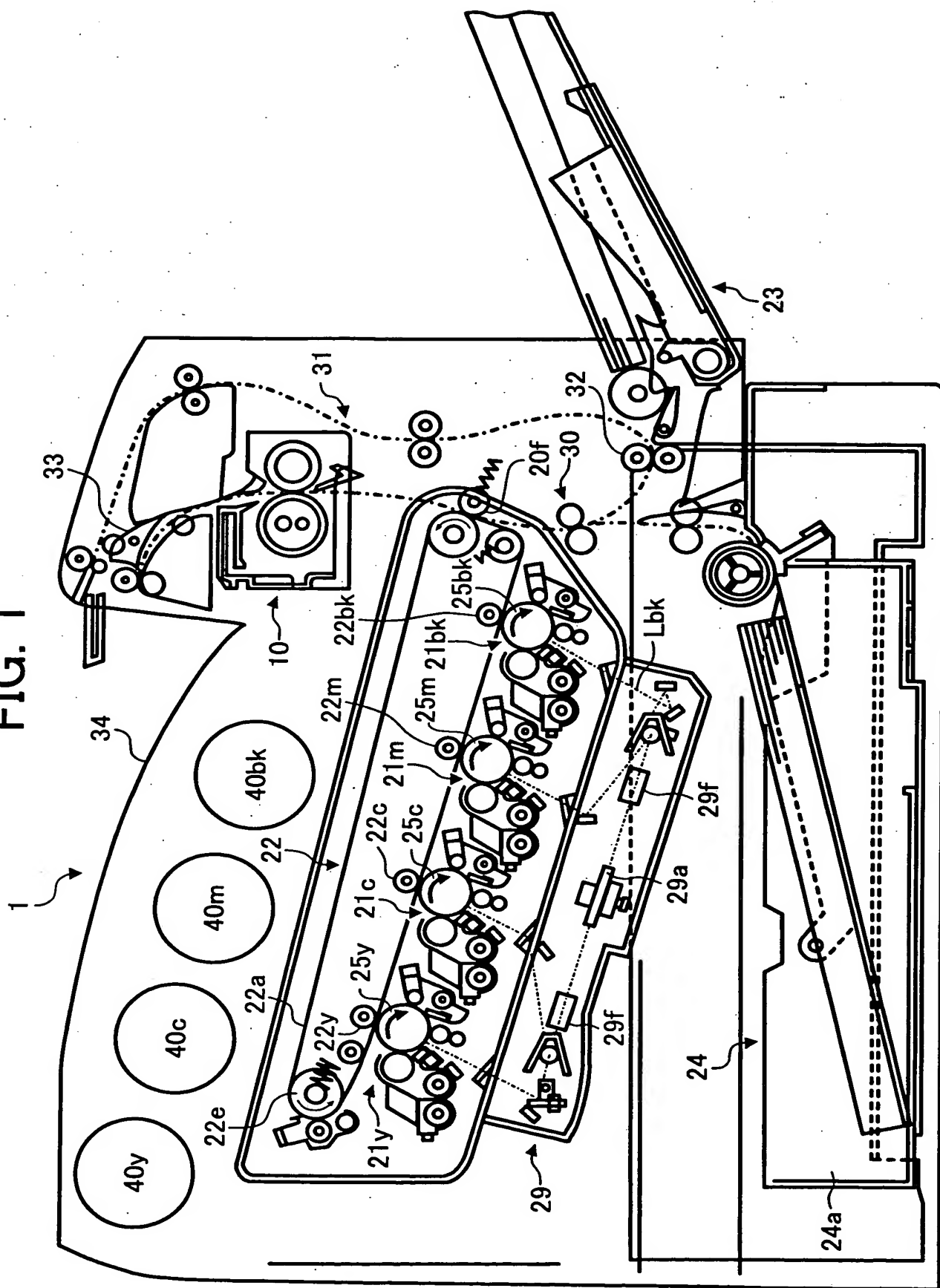


FIG. 2

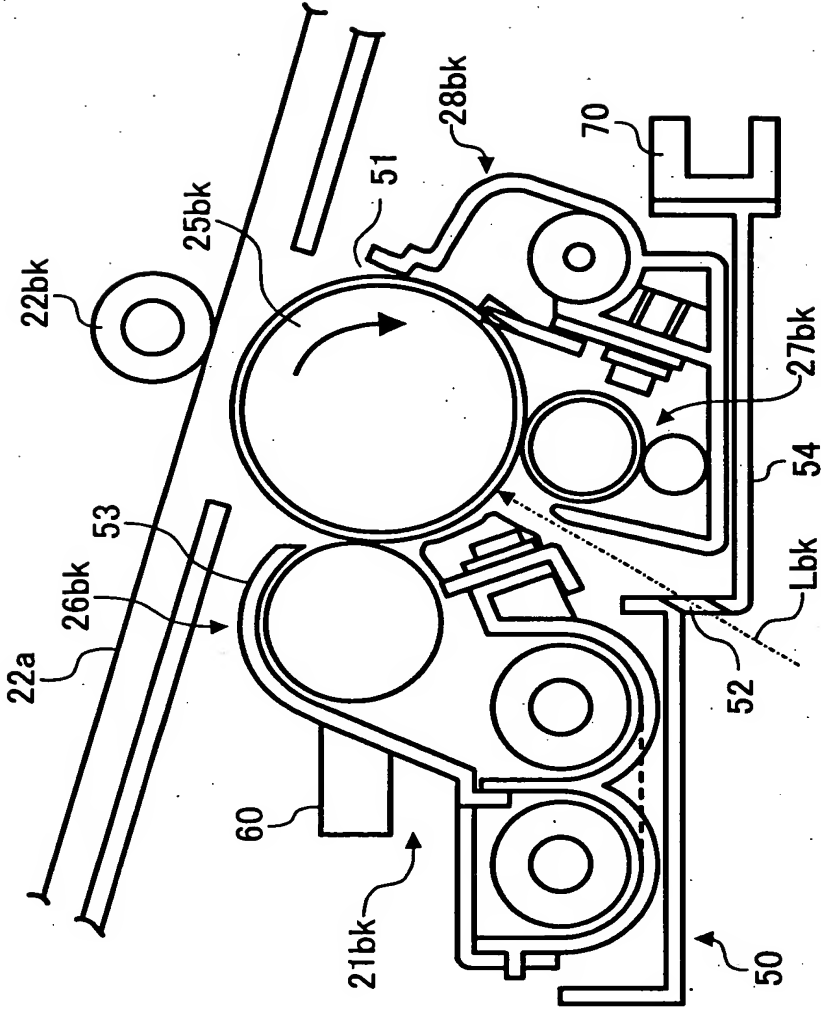


FIG. 3

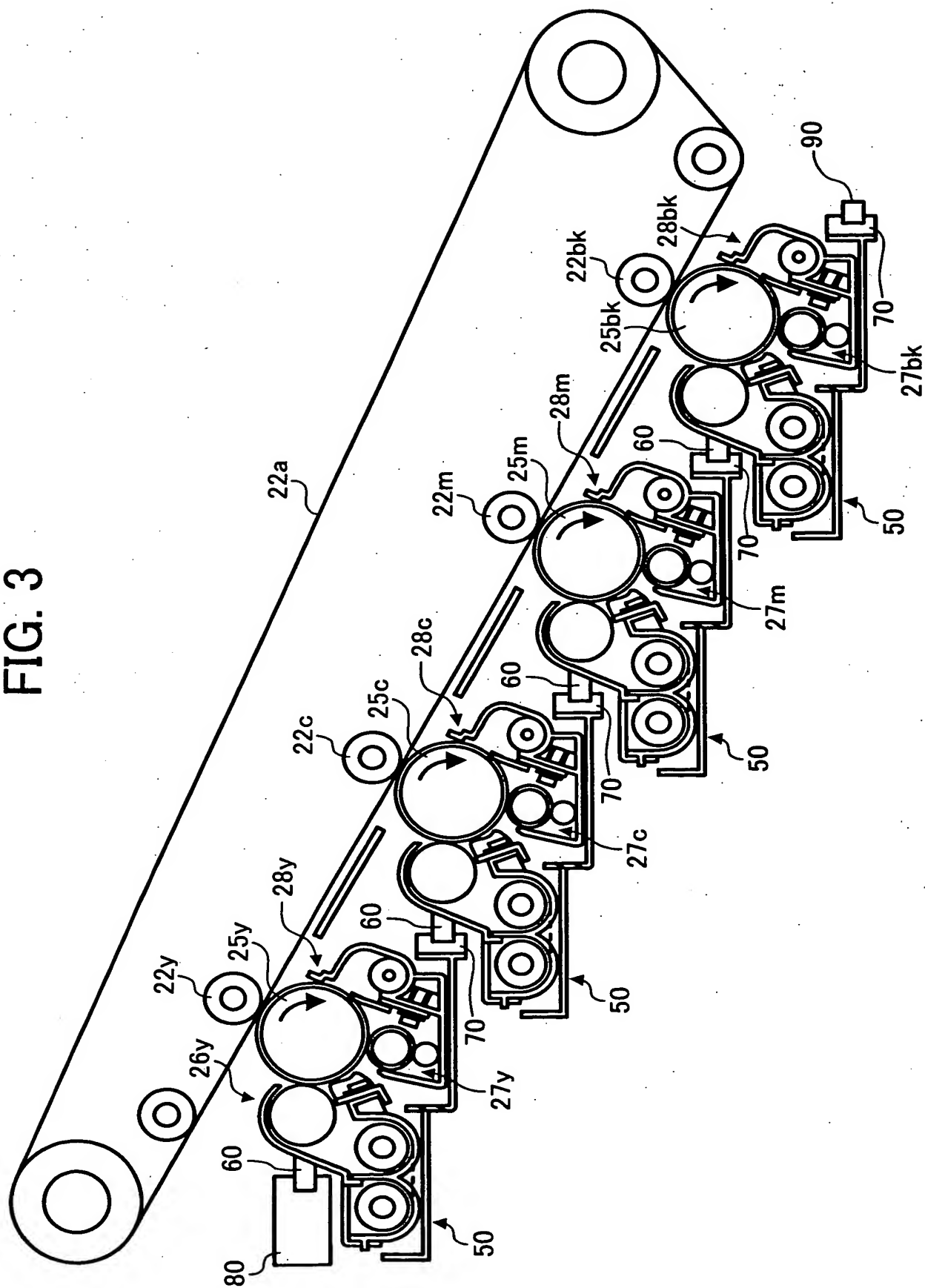


FIG. 4

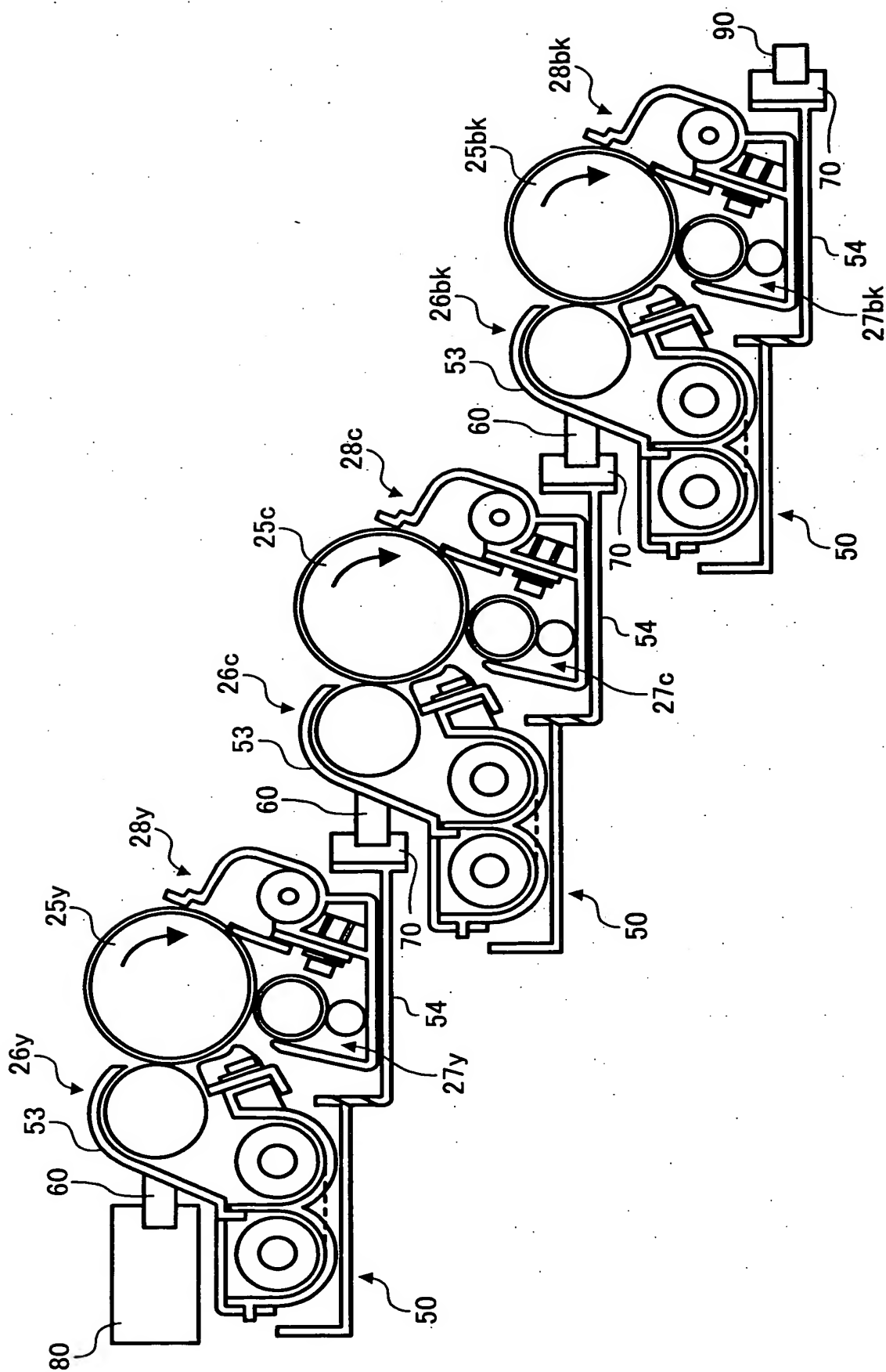


FIG. 5

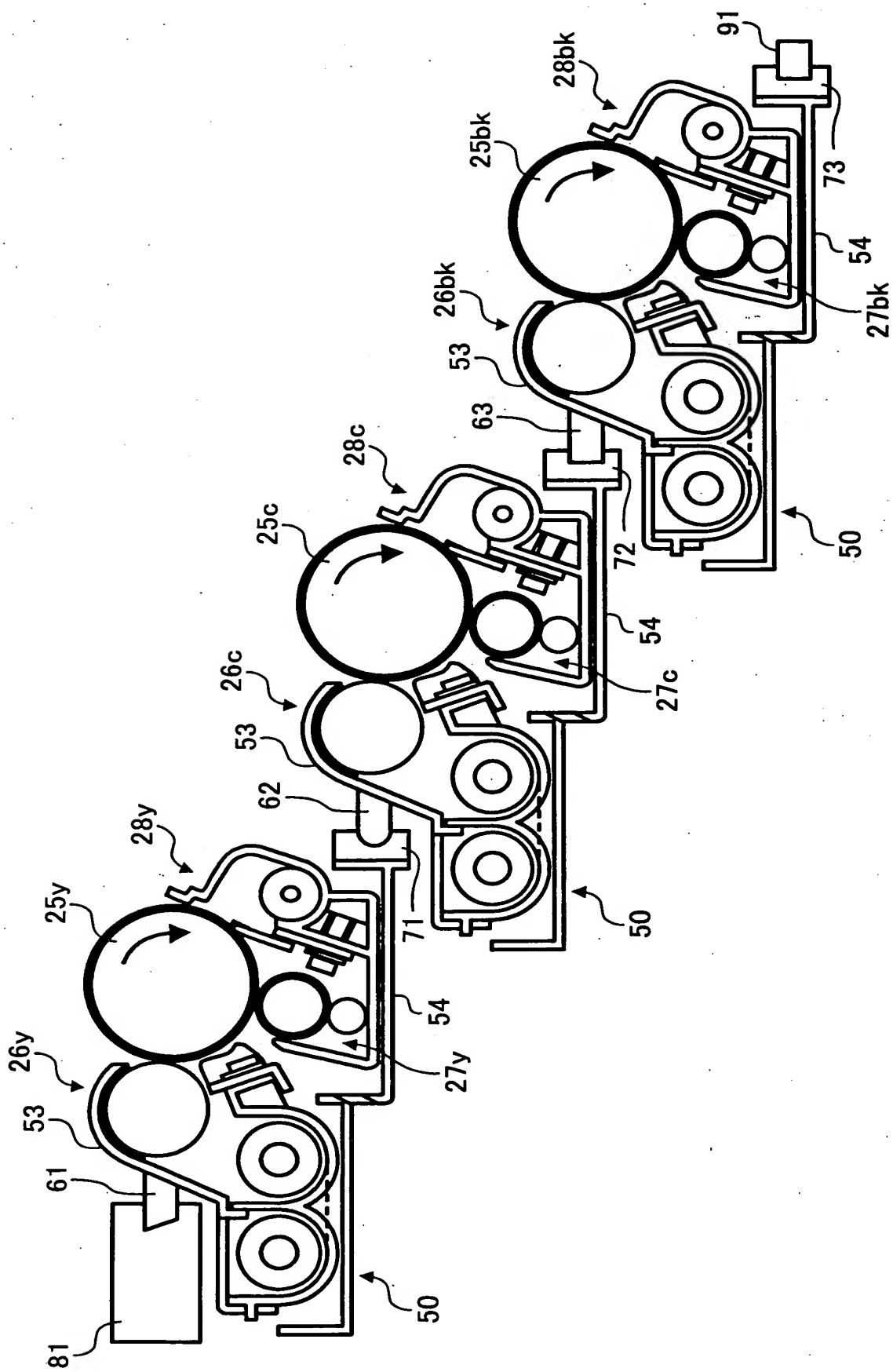


FIG. 6

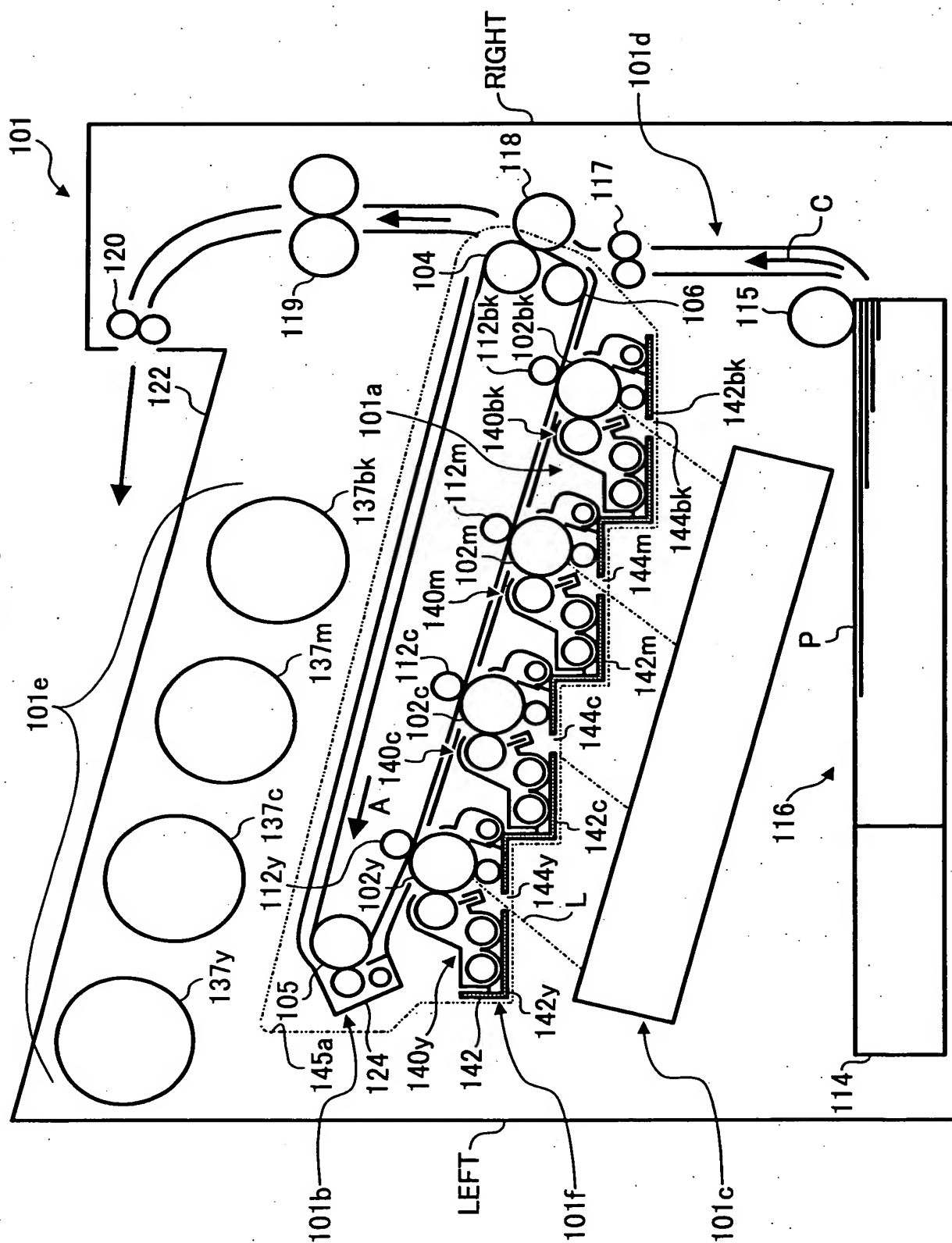


FIG. 7

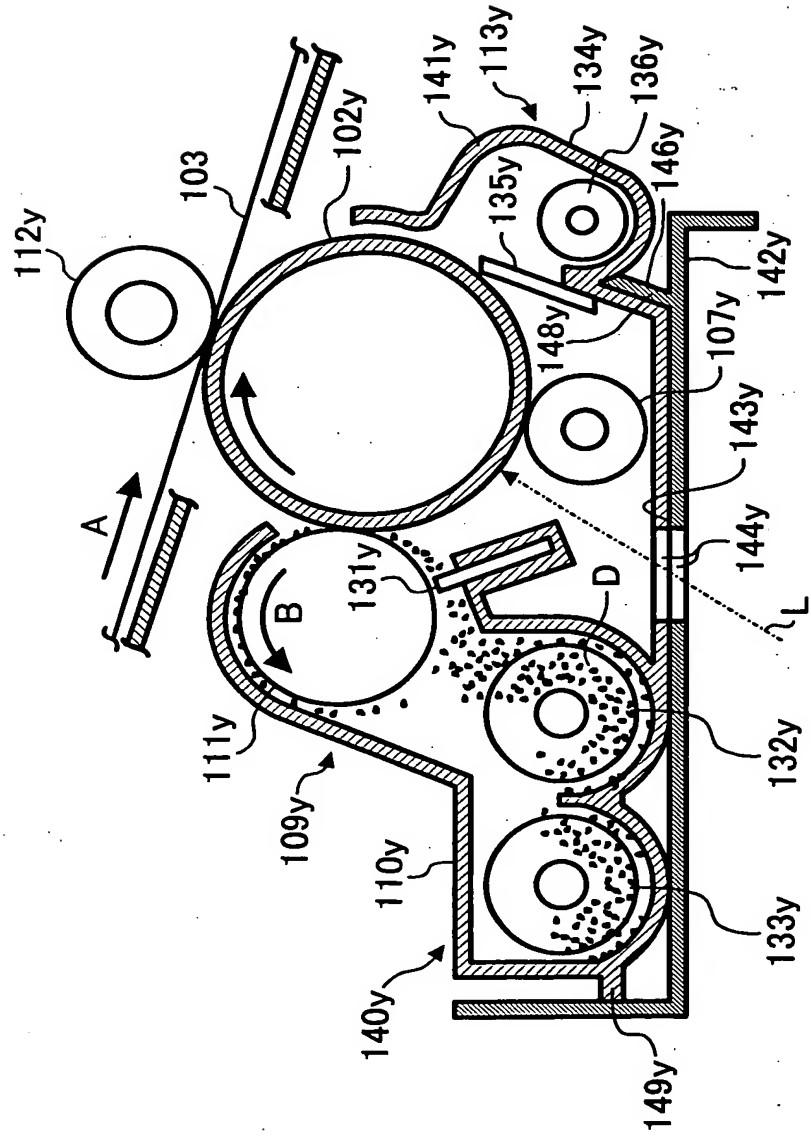


FIG. 8

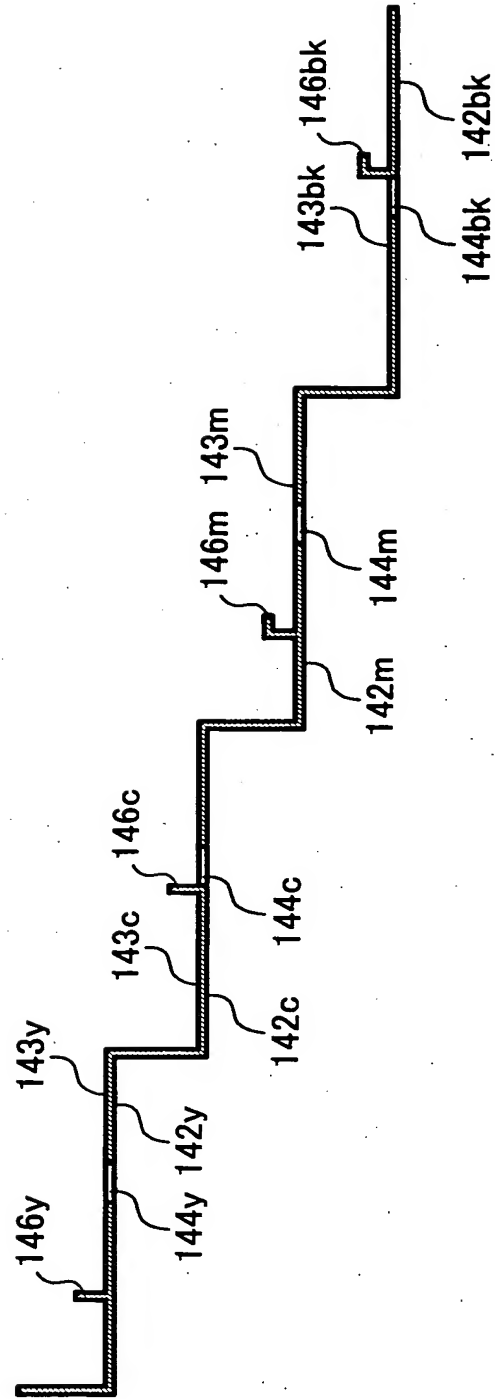


FIG. 9

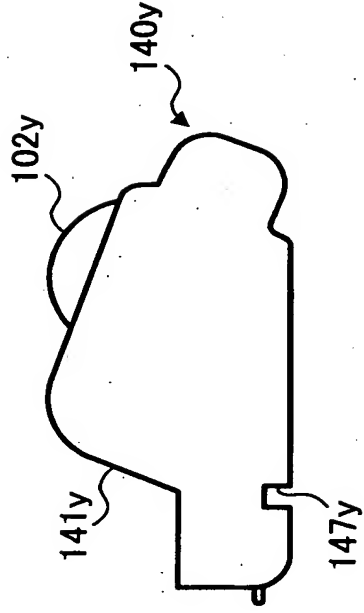
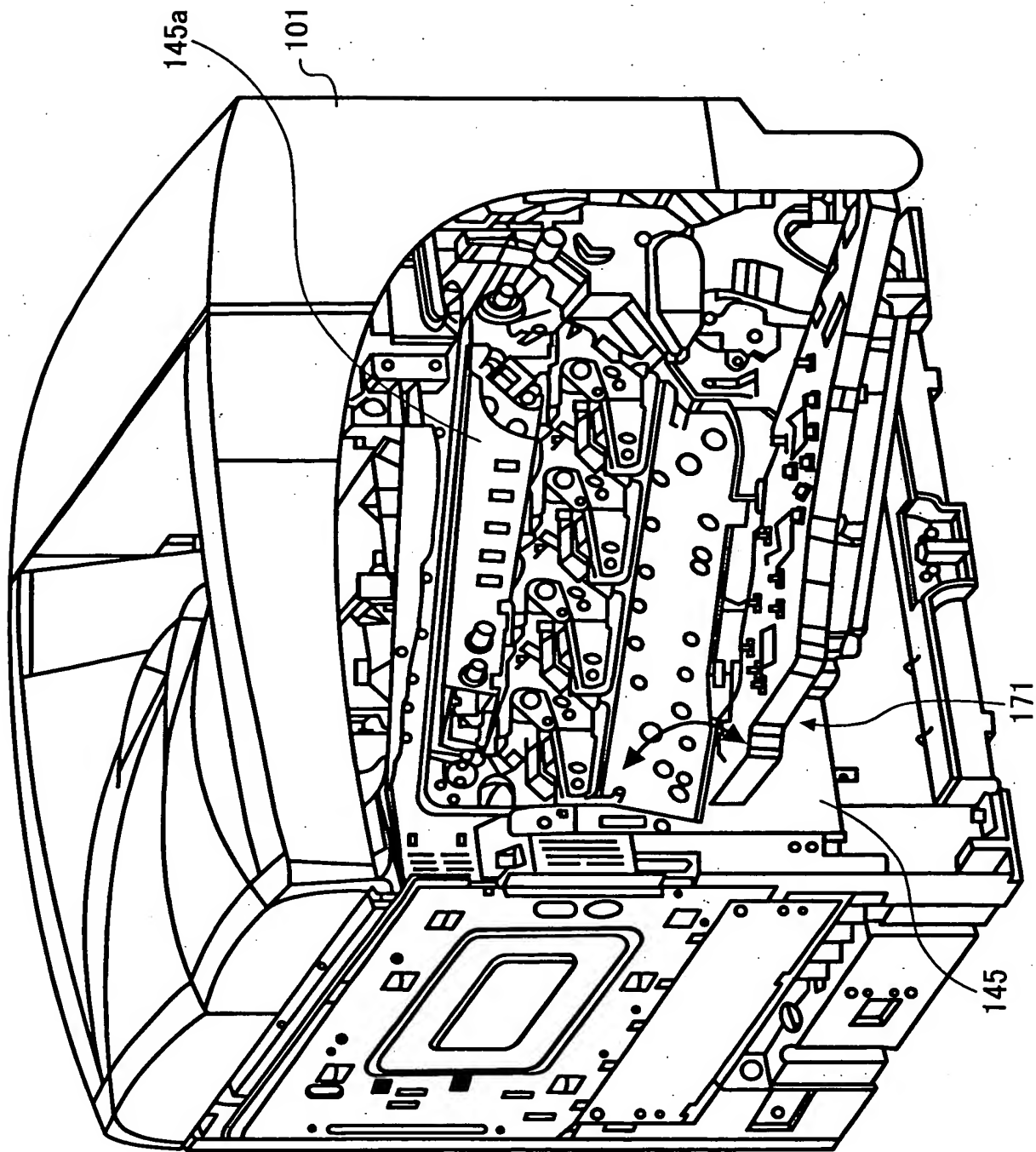


FIG. 10



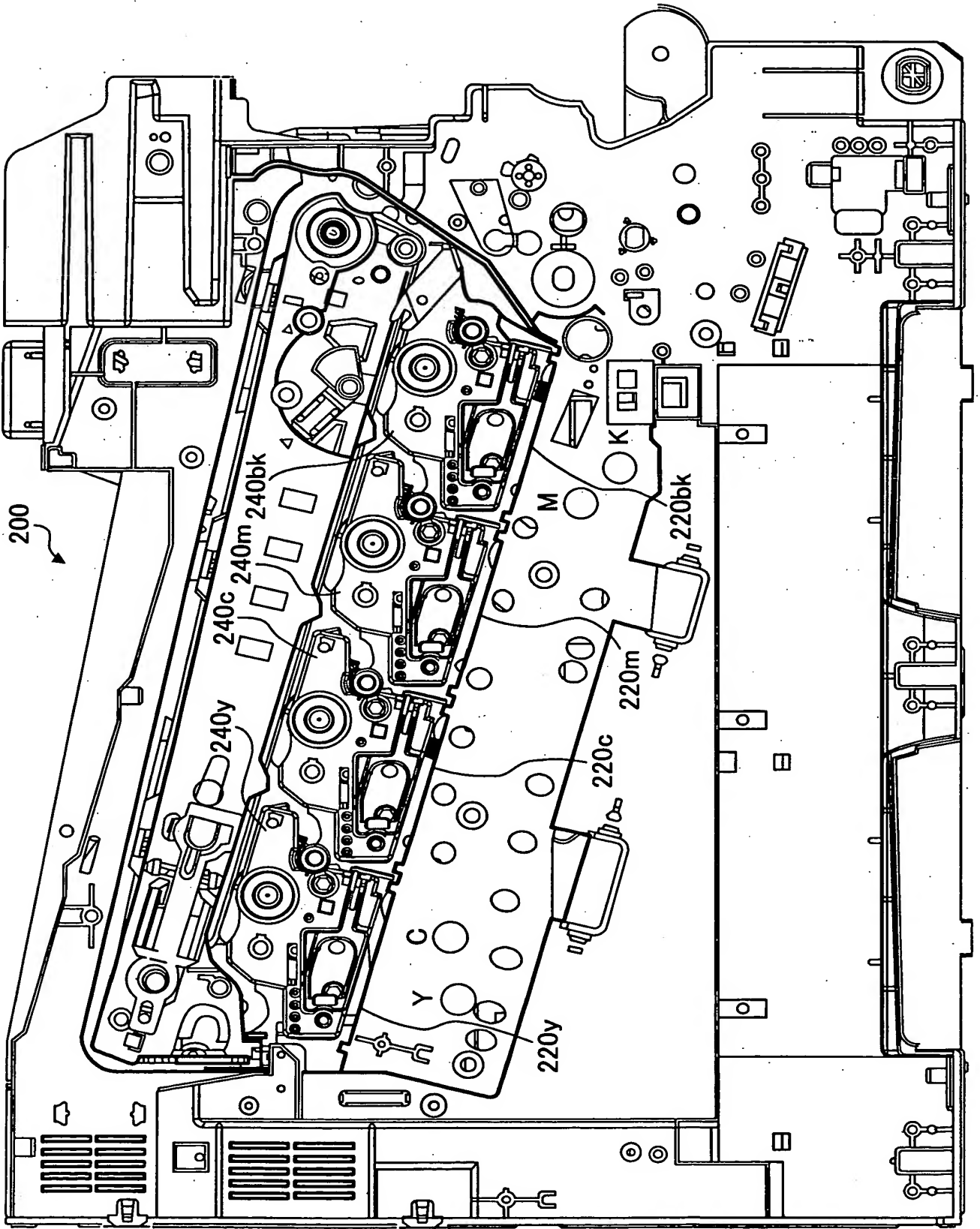


FIG. 11

FIG. 12

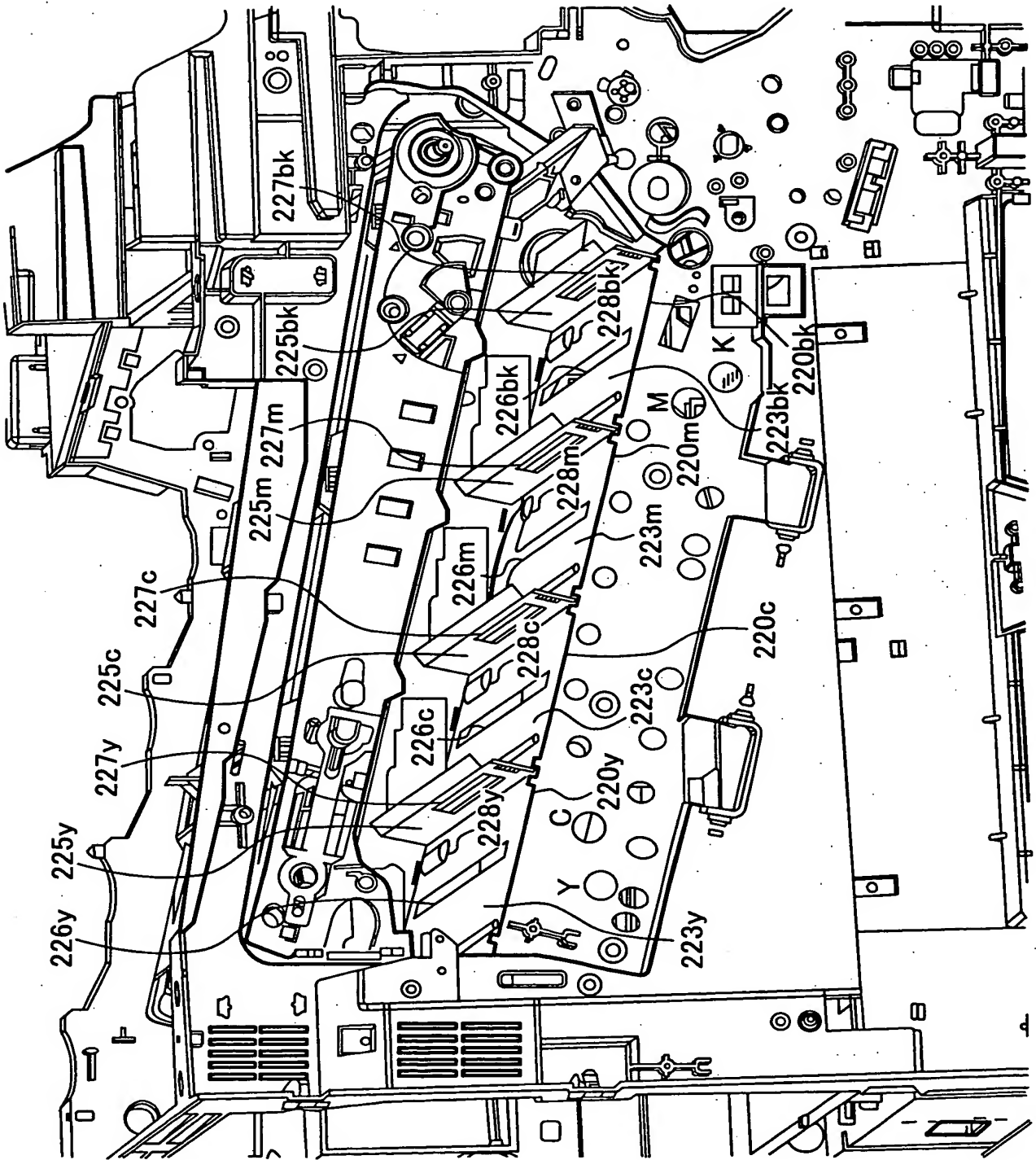


FIG. 13

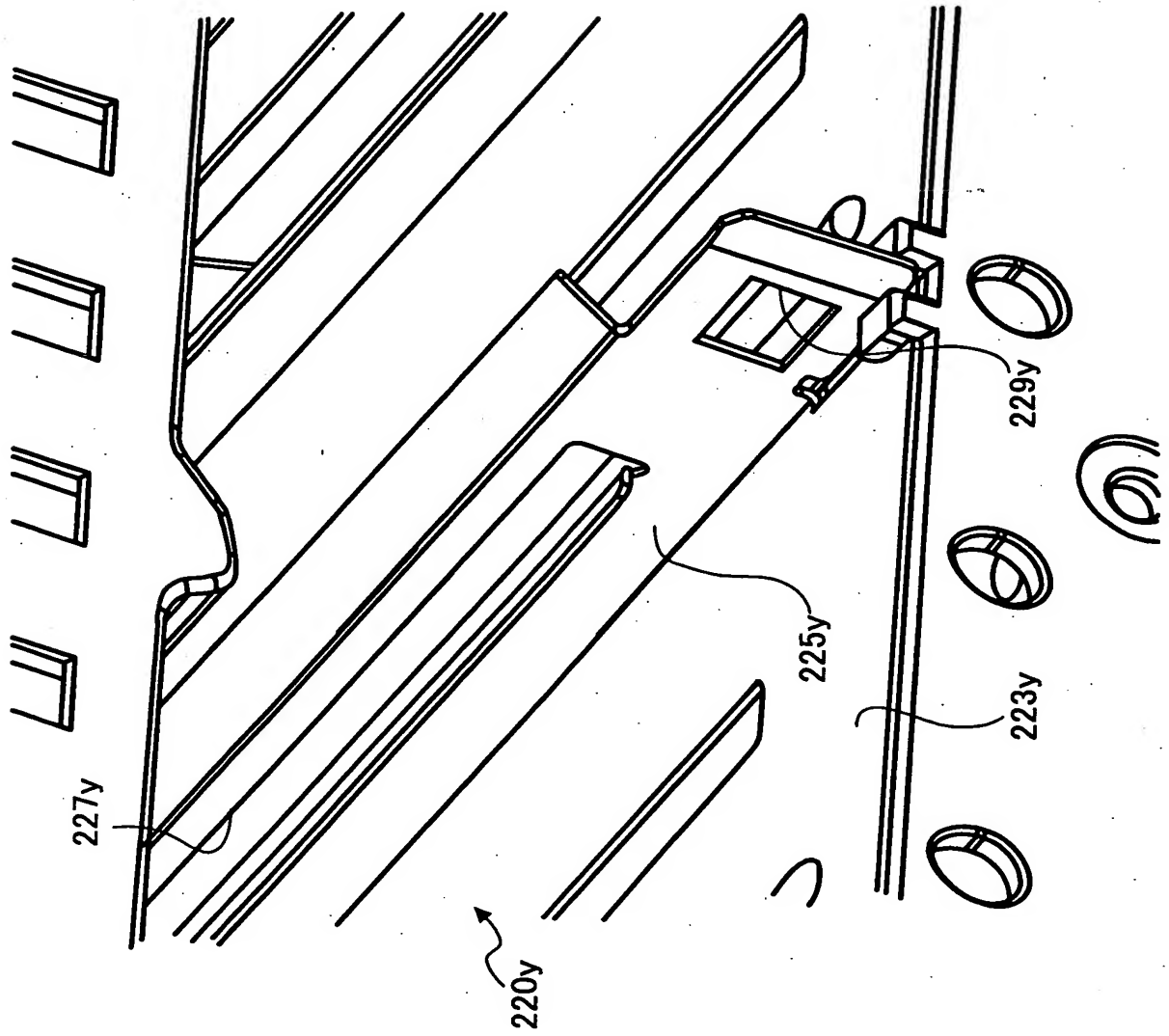


FIG. 14

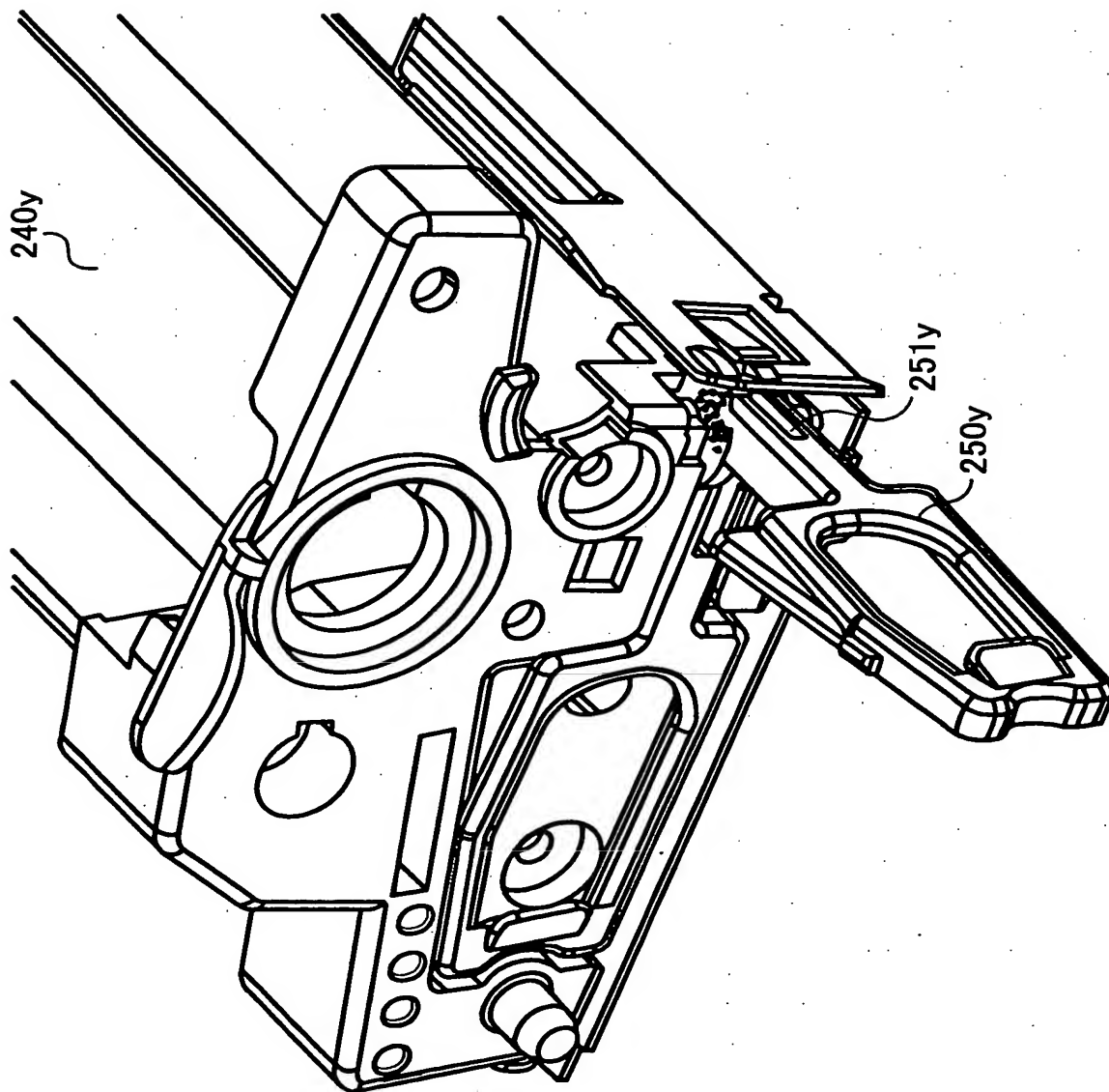


FIG. 15

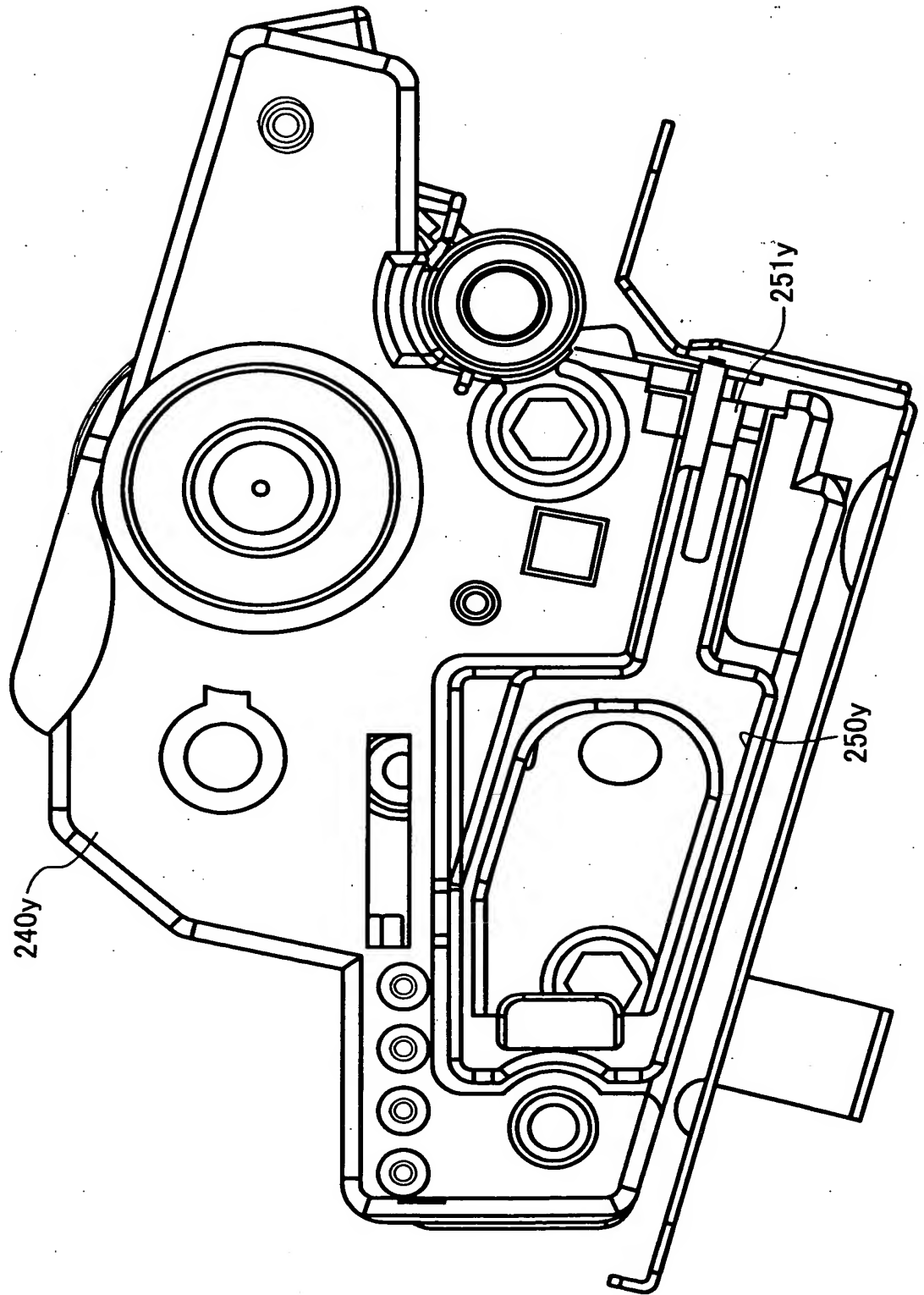


FIG. 16

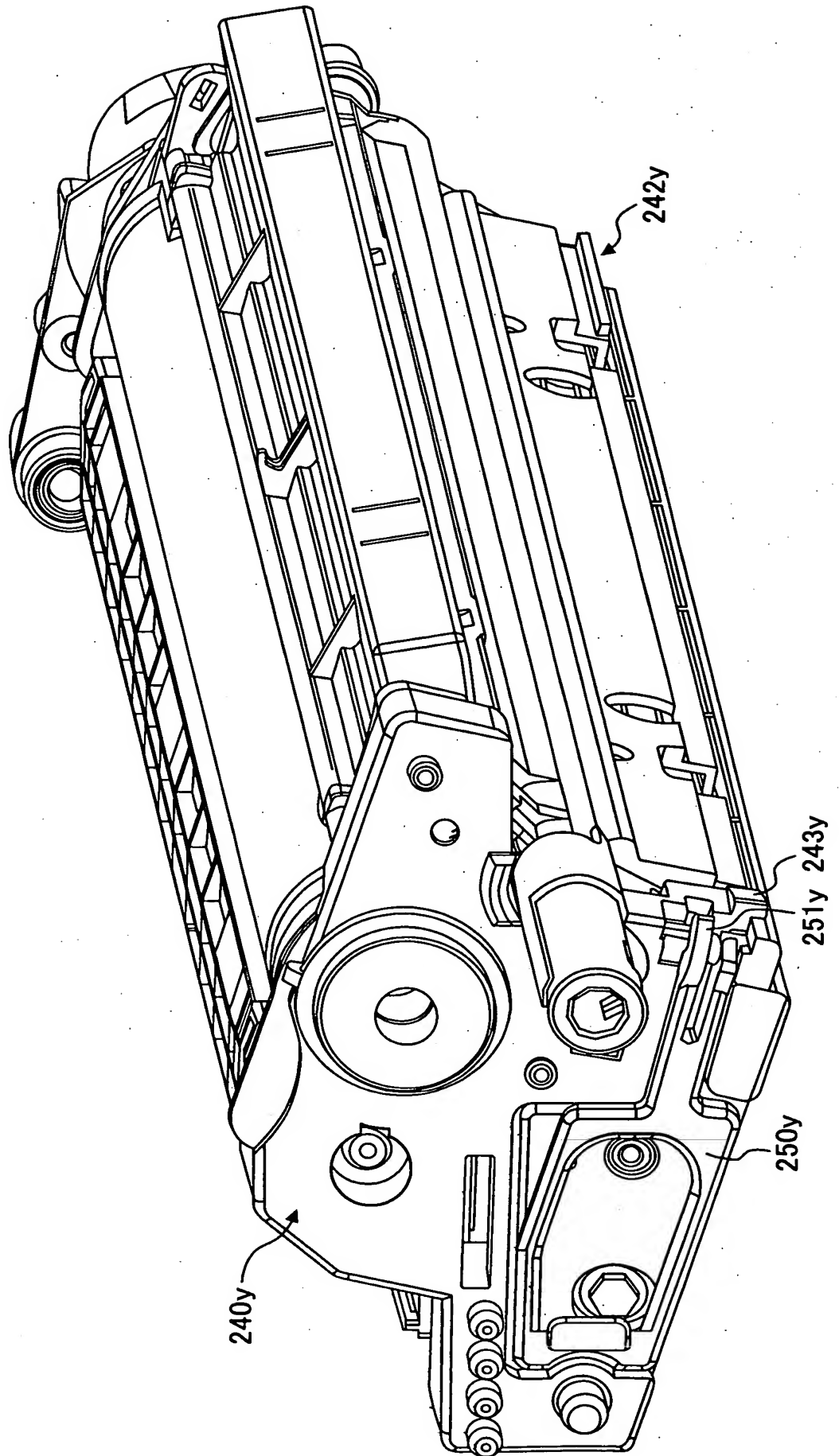


FIG. 17

